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AUTHOR Mathis, William J.
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ABSTRACT

In this report, revisions made by the New Jersey State Board of Education to its administrative code in order to implement provisions of the law providing an additional cost factor for the state compensatory education fund are described. Methods utilized by Federal and State governments for targeting resources are discussed. including socioeconomic funding, test-based funding, and a combination of these approaches. The combination approach used in New Jersey is detailed, along with the formula used for determination of estimated State compensatory education enrollment levels. (WI)

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THE USE OF BASIC SKILLS AND SOCIO-ECONOMIC DATA IN DETERMINING STATE COMPENSATORY FUNDING ENTITLEMENTS

William J. Mathis, Ph.D.
Director, Bureau of Research and Assessment
New Jersey Department of Education
Trenton, New Jersey

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I. BACKGROUND

The T&E law (Chapter 212, laws of 1975) establishes a state compensatory education fund which provides an additional cost factor of .11 times the state average current expense budget per pupil for the prebudget year. For the 1977-78 school year, this amounts to approximately $165 per compensatory education student. These students are defined in the law as pupils who are enrolled in preventive and remedial programs, approved by the State Board, who have academic, social, economic or environmental needs that prevent them from succeeding in regular school programs.

The State Board of Education adopted revisions to the administrative code on June 1, 1977 in order to implement the provisions of this law. The section of these provisions which apply to the determination of eligibility levels is:

> 6:8-3.8 b(1).- "Enrollment of all pupils who have academic, social, economic, or environmental needs that prevent them from succeeding in the regular school program in appropriate preventive or remedial programs up to eligibility levels determined by the Department of Education, based upon the severity of academic need as measured by student performance on the statewide assessment instruments and those students provided for in NJAC 6:39-1.4(b), and based upon severity of socio-economic need as measured by appropriate income

and related indicators, and, documented by the needs assessment conducted pursuant to NJAC 6:8-3.4 (a)."

II. METHODS OF TARGETING RESOURCES

Relatively few methods of allocating resources have been utilized by the federal government or by state governments. The methods that have been attempted can be divided into two major categories:

A. Socio-economic funding - The AFDC (low income) count has been the primary vehicle employed in this regard. The advantages of this method are that it targets the funds to low income groups and that it has a high degree of acceptance due to several years of utilization. The greatest disadvantage is that not all of the needy children are identified with this approach. This is particularly true for the academically needy.

The Orshansky index is a variation of this approach which counts two-thirds of the AFDC children above the poverty level. This approach severely underestimates the need in New Jersey. Though the poverty level is updated annually through the Consumer Price Index, the base data is from the 1970 census and is essentially a single variable criteria. Both approaches count resident students and do not separate private institutionalized, neglected, or delinquent children and non-public enrolled children from the count.

Problems with these two measures reside in the use of old data and the concentration on a single variable.

To alleviate this problem, a composite factor score of socio-economic status (DFG) was considered for use. Theoretically, this was a far better approach since the range of the composite variable was not restricted, multiple indicators were used, and the data was recently validated in the local districts in the state. Two problems were encountered in that rapidly changing communities were not accurately categorized and the data base did not exist for extremely small population districts. A regression prediction was attempted to resolve these problems but the predictive ability was not sufficient to resolve the problem. A more fundamental problem resided in the difficulty of translating the standardized factor scores into a "count" of children. Though the factor score is an extremely strong measure, the technical difficulties prevented its use.

In sum, the AFDC count is the most viable of the socio-economic based options. The Orshansky index was too conservative and the composite socio-economic factor (DFG) posed technical problems which have not yet been resolved. Further research in this latter areas is being conducted.

B. Test-Based Funding - This method has been attempted in three states (New York, California, and Michigan) and was considered in New Jersey. The greatest strength of the technique is that

it assures that funds reach academically needy students. Major technical problems, however, are encountered.

First, academic difficulties are addressed but "social, economic, and environmental" needs are not directly addressed. The nature of the interrelationship of these variables indicated that a total test-based system could miss as many as 50% of the needy children. Secondly, a disincentive is built in which rewards schools for low performance.

A variation on the test-based system was investigated in New Jersey with the use of local standards. The variation of these local standards, however, would result in a local district determined floating base.

In sum, a test-based system has a great degree of merit as it is based on a direct measure of need. The problems with the approach are that it does not target resources due to causative factors and it contains a disincentive. The use of academic components should, therefore, be relatively small in relation to other factors.

Combination Approaches - Neither the federal government nor any of the states have attempted a combination approach. Theoretically, however, this is the strongest of the possible options. The weaknesses of the income based and test-based approaches are balanced and, in the New Jersey case, the requirements of the law are fully met.

III. DETERMINATION OF ESTIMATED SCE ENROLLMENT LEVELS IN NEW JERSEY

Based on the previous review, a combination approach was developed which utilized AFDC as a poverty indicator and the state tests as the measure of uniform state achievement. The formula required constants to balance the proportion of test based eligibility to that of income based.

In the simplest form, the formula was expressed as:

$$\text{District Estimated Enrollment Level} = [\text{Academic Need}]\left[\begin{array}{c}\text{Constant}\\ \text{For}\\ \text{Academic}\end{array}\right] + \left[\begin{array}{c}\text{Socio-}\\ \text{Economic}\\ \text{Need}\end{array}\right]\left[\begin{array}{c}\text{Constant}\\ \text{For}\\ \text{SES}\end{array}\right]$$

The academic need portion had to account for the severity of need and also for the needy children in the nontested grades (state tests were administered in grades 4, 7, and 10).

Obviously, the need of a student who is one point below the minimum standard is different from the student who is 50 points below the minimum standard. In order to take this into account, the students were divided into score interval categories for each district and each grade level tested. The intervals were:

		Severity Weight
0.	65% and above - Above standard, not counted	0
1.	50% - 64% correct	.5
2.	35% - 49% correct	1
3.	20% - 34% correct	1.5
4.	0 - 19% correct	2

The severity index was calculated by:

$$\sum_{1}^{4} \frac{N_L}{N_B} \text{ (severity weight)}$$

Where: $\sum_{1}^{4}$ - Sum of elements across the severity levels.

N_L - Number below at the severity level for the district.

N_B - Total number below for the district as a whole.

The second concern, extrapolation to all grade levels from the tested grades, was solved using a polynomial regression technique which considers DFG and AFDC components.

The best equation to estimate the percent of students below minimum standards in grades 5, 6, 8, and 9 was determined to be:

$$\text{Percent Below Standard} = .184\,(\text{grade}) - .012\,(\text{grade})^2 - .03\,(\text{DFG}) + 1.04\,(\text{AFDC}) - .81\,(\text{AFDC})^2 - .11\,(\text{DFG})\,(\text{AFDC}) - .0001\,(\text{grade})^2\,(\text{DFG})^2 - .41$$

(This equation was used for grades 5, 6, 8, and 9.)

The fourth grade scores were used to predict grades 1, 2, and 3 while the tenth grade scores were used to predict grades 11 and 12.

Once the degree of severity was calculated and the percent below standard was extrapolated, these functions were multiplied by the number in the grade level and summed across the grade levels in the district.

Therefore, the formula for the academic need portion is:

$$\text{District Academic Need} = \sum_{1}^{J} [\text{Percent Below Standard}]\ [\text{Severity Index}]\ [N_g]$$

$$= \sum_{1}^{J} \left(\begin{array}{l} .184(Gr) - .012(Gr)^2 - .03\ (DFG) \\ + 1.04\ (AFDC) - .81\ (AFDC)^2 - .11 \\ (DFG)\ (AFDC) - .0001\ (Gr)^2\ (DFG)^2 \\ - .41 \end{array} \right) \left(\sum_{1}^{4} \frac{N_L(SW)}{N_B} \right) \left(N_g \right)$$

Where: N_g = Number of students at each grade level in the district.

$\sum_{1}^{J}$ = Sum of the equation for each of the grade levels in the district.

SW = Severity weight

The poverty side of the equation is simply the count of low income students in the district.

Constants - In order to balance the equation, constants for academic need and for poverty level were needed. The conditions in determining these constants were:

- The socio-economic weight had to be greater than the achievement weight.
- The weights had to reflect the inter-correlation of achievement and socio-economic indicators. Generally, these measures correlate at around .70 which indicates that approximately 50% of the variance of one can be accounted for by the other. In practical terms, this means a "duplicated count" which must be adjusted through the relative proportions of the constants.

  The constants which met these conditions were:

$$K_{Achv.} = .67$$

$$K_{SES} = 1.0$$

Thus, the final formula took the form of:

$$\text{District Eligibility Level} = \left[\sum_{1}^{J} \left(\begin{array}{l} .184(Gr) - .012(Gr)^2 - .03\ (DFG) \\ + 1.04\ (AFDC) - .81\ (AFDC)^2 - .11 \\ (DFG)\ (AFDC) - .0001\ (Gr)^2\ (DFG)^2 \\ - .41 \end{array} \right) \left(\sum_{1}^{4} \frac{N_L(SW)}{N_B} \right) (N_g) \right] [K_A] +$$

$$[AFDC] \quad [K_{SES}]$$